

CLAIMS:

1. An open-end spinning device for spinning fibers into a yarn, the spinning device comprising a rotor housing, a spinning rotor disposed for rotation in the rotor housing for receiving the fibers to be spun into the yarn, a yarn withdrawal nozzle for withdrawal therethrough of the yarn, the spinning rotor having a circumferential rotor groove at a greatest inside diameter within the rotor for collecting the fibers to be spun into yarn, and the rotor defining a lagging fiber tie-up zone at which a yarn shank extends from the yarn withdrawal nozzle to the rotor groove in a curvature at least in the vicinity of the rotor groove counter to the direction of rotation of the rotor, a rotor insert rotatably supported within the rotor coaxially therewith, and a drive arrangement for causing the rotor insert to rotate in the direction of rotation of the spinning rotor at a rotational speed retarded during spinning operation from the rotational speed of the spinning rotor by an amount corresponding substantially to a lag of the tie-up zone, the rotor insert comprising a guide portion for guiding the yarn shank between the rotor groove and the yarn withdrawal nozzle and for supporting the curvature of the yarn shank counter to the direction of rotor rotation in all spinning phases.

2. The open-end spinning device according to Claim 1, wherein during normal spinning operation, the yarn shank in association with the yarn guide delays the rotor insert in comparison to the drive arrangement synchronous with the spinning rotor.

3. The open-end spinning device according to Claim 1, wherein the drive arrangement for the rotor insert comprises a contactless coupling to the spinning rotor.

4. The open-end spinning device according to Claim 3, wherein the contactless coupling for the rotor insert comprises permanent magnets arranged concentrically.

5. The open-end spinning device according to Claim 1, wherein the yarn guide comprises a yarn guide conduit having an entrance opening on a side of the rotor insert facing the rotor groove, the yarn guide conduit being configured to support the curvature of the yarn shank counter to the direction of rotor rotation.

6. The open-end spinning device according to Claim 5, wherein the rotor insert has surfaces bordering front and rear sides of the yarn guide conduit as viewed in the direction of rotation of the yarn guide conduit, the rear side surface forming an extension of the yarn guide conduit.

7. The open-end spinning device according to Claim 1, wherein the rotor insert has a central recess having an oblique edge surface for partially receiving the yarn guide conduit in a closed position of the open-end spinning device.

8. The open-end spinning device according to Claim 6, wherein the rear side surface of the yarn guide conduit is configured to capture the yarn shank.

9. The open-end spinning device according to Claim 1, wherein the yarn guide is comprises a yarn entrainment element.

10. The open-end spinning device according to Claim 9, wherein the yarn guide comprises plural entrainment elements for guiding of the yarn shank by one of the entrainment elements.

11. The open-end spinning device according to Claim 10, wherein each of the entrainment elements comprise a permanent magnet.

12. A spinning rotor for use in an open-end spinning device, the spinning rotor defining a lagging fiber tie-up zone at which a yarn shank extends to a circumferential rotor groove in a curvature at least in the vicinity of the rotor groove counter to the direction of rotation of the rotor, and the spinning rotor comprising a rotor insert configured to be rotatably supported within the rotor coaxially therewith for cooperation with the spinning rotor in the spinning of fibers with the yarn shank, the rotor insert comprising an arrangement for cooperation with the spinning rotor for causing the rotor insert to rotate in the direction of rotation of the spinning rotor at a rotational speed retarded from the rotational speed of the spinning rotor by an amount corresponding substantially to a lag of the tie-up zone, and the rotor insert further comprising a guide portion for guiding the yarn shank between the rotor groove and the yarn withdrawal nozzle and for supporting the curvature of the yarn shank counter to the direction of rotor rotation in all spinning phases.

13. A method of open-end spinning of fibers into a yarn, the spinning method comprising the steps of: delivering opened fibers into a rotating spinning rotor, centrifugally collecting the fibers in a circumferential rotor groove at a greatest inside diameter within the rotor, extending a yarn shank into the rotor groove with the yarn shank forming a curvature at least in the vicinity of the rotor groove counter to the direction of rotation of the rotor for defining a lagging fiber tie-up zone for progressively attaching the collecting fibers to the yarn shank, rotating a rotor insert within the rotor coaxially therewith in the direction of rotation of the spinning rotor at a rotational speed retarded from the rotational speed of the spinning rotor by an amount corresponding substantially to a lag of the tie-up zone, and

guiding the yarn shank for maintaining the curvature of the yarn shank counter to the direction of rotor rotation.